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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/084,991	03/01/2002	Katsuhiko Nishikawa	P67615US0	1121

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EXAMINER

RAIZEN, DEBORAH A

ART UNIT PAPER NUMBER

2873

DATE MAILED: 07/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/084,991

Applicant(s)

NISHIKAWA, KATSUHIKO

Examiner

Deborah A. Raizen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,3,5 and 6 is/are rejected.
- 7) ☒ Claim(s) 2 and 4 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities: On page 4, line 3, the word "not" in the phrase "not the raised cams" should be replaced with the word "or".

Appropriate correction is required.

Claim Objections

2. Claims 1, 3, 5, and 6 are objected to because of the following informalities:
The phrase "at least one of cam faces" is missing an article for cam faces. It should be replaced with the phrase "at least one cam face".

In claim 6, line 6, "nor" should be replaced with "or" for grammatical correctness and for clarification (note that "nor" combined with the word "no" in line 5 makes a double negative).

Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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4. Claims 1 and 3 are rejected under 35 U.S.C. 102(e) as being anticipated by Nomura et al. (6,549,341). In regard to claim 1, Nomura discloses a lens barrel (col. 1, lines 7-8) comprising a cam barrel (17 in Figs. 1 and 19) of synthetic resin (col. 16, lines 52-53), the cam barrel having its outer surface provided with raised cams (a male helicoid, col. 7, lines 28-30; the threads of a male helicoid would fall under the definition of a cam), each of the raised cams having at least one of cam faces inclined toward an opposite cam face off a radial direction relative to an optical axis (Fig. 19: both of the cam faces are inclined).

In regard to claim 3, Nomura discloses a cam barrel (17 in Figs. 1 and 19) of synthetic resin (col. 16, lines 51-53) used in a lens barrel (col. 1, lines 7-8), comprising cam grooves (col. 8, lines 9-11: because introducing groove 17d is cut at an angle, as shown in Figs. 1 and 4, it would act as a cam; alternatively, the broadest interpretation of the claim would not limit the cam grooves with "in the outer surface"; therefore cam grooves 17c1 and 17c2 would meet the limitation "cam grooves"; col. 8, lines 42-44) and raised cams in the outer surface (a male helicoid, col. 7, lines 28-30), each of the raised cams having at least one of cam faces inclined toward an opposite cam face off a radial direction relative to an optical axis (Fig. 19: both of the cam faces are inclined).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nomura et al. (6,549,341) in view of Nomura (5,210,644).

In regard to claim 5, Nomura et al. '341 discloses a cam barrel (17 in Figs. 1 and 19) made of synthetic resin (col. 16, lines 52-53) suitable for use in a lens barrel (col. 1, lines 7-8), and the cam barrel has its outer surface provided with raised cams (a male helicoid, col. 7, lines 28-30), each of the raised cams having at least one of cam faces inclined toward an opposite cam face off a radial direction relative to an optical axis (Fig. 19: both of the cam faces are inclined). However, Nomura et al. '341 does not disclose a die designed to mold the cam barrel and configured so that the cam barrel has the above features. Furthermore, Nomura et al. '341 does not explicitly disclose that there is no undercut left in the raised cams.

Nomura '644 discloses a die designed to mold a cam barrel of synthetic resin suitable for use in a lens barrel (col. 2, line 62 to col. 3, line 2). Furthermore, Nomura '644 teaches that such a die allows the molding of cam grooves, which are equivalent to two or more cam faces, of a particular cross-sectional shape (col. 2, lines 67-68). Therefore, it would have been obvious for someone of ordinary skill in the art to use a die such as that disclosed in Nomura '644 configured to mold a cam barrel with the features disclosed in Nomura et al. '341 because such a die allows the molding of two or more cam faces with a particular cross sectional shape, as taught by Nomura '644.

Furthermore, Nomura '644 discloses that an outwardly widened trapezoid cross-sectional shape of the cam grooves prevents undercut in the molding (col. 2, line 67 to col. 3, line 2). This disclosure shows that the shape of the raised cams disclosed in Nomura '341 would inherently

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leave no undercut in the raised cams because the critical feature is the slant of a cam face, whether it is part of a groove or a raised cam.

In regard to claim 6, Nomura et al. '341 discloses a cam barrel (17 in Figs. 1 and 19) made of synthetic resin (col. 16, lines 52-53) suitable for use in a lens barrel (col. 1, lines 7-8), and the cam barrel has cam grooves (col. 8, lines 9-11: because introducing groove 17d is cut at an angle, as shown in Figs. 1 and 4, it would act as a cam; alternatively, cam grooves 17c1 and 17c2, col. 8, lines 42-44) and raised cams in its outer surface (a male helicoid, col. 7, lines 28-30), each of the raised cams having at least one of the cam faces inclined toward an opposite cam face off a radial direction relative to an optical axis (Fig. 19: both of the cam faces are inclined). However, Nomura et al. '341 does not disclose a die designed to mold the cam barrel and configured so that the cam barrel has the above features. Furthermore, Nomura et al. '341 does not explicitly disclose that there is no undercut left in the either the cam grooves or the raised cams.

Nomura '644 discloses a die designed to mold a cam barrel of synthetic resin suitable for use in a lens barrel (col. 2, line 62 to col. 3, line 2). Furthermore, Nomura '644 teaches that such a die allows the molding of cam grooves, which are equivalent to two or more cam faces, of a particular cross-sectional shape (col. 2, lines 67-68). Therefore, it would have been obvious for someone of ordinary skill in the art to use a die such as that disclosed in Nomura '644 configured to mold a cam barrel with the features disclosed in Nomura et al. '341 because such a die allows the molding of cam grooves and of two or more cam faces with a particular cross sectional shape, as taught by Nomura '644.

Furthermore, Nomura '644 discloses that an outwardly widened trapezoid cross-sectional shape of the cam grooves prevents undercut in the molding (col. 2, line 67 to col. 3, line 2). This disclosure shows that the shapes of the raised cams and of the cam grooves disclosed in Nomura '341 would inherently leave no undercut in the cam grooves or the raised cams because the critical feature is the slant of a cam face, whether it is part of a groove or a raised cam.

Allowable Subject Matter

7. Claims 2 and 4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
8. The following is a statement of reasons for the indication of allowable subject matter:
The prior art taken either singularly or in combination fails to anticipate or fairly suggest the limitations of claims 2 and 4, in such a manner that a rejection under 35 U.S.C. 102 or 103 would be proper.
9. The prior art fails to teach a combination of all the features in claim 2. For example, these features include the detailed structure recited in claim 1 and also the limitation that the cam face opposed to the inclined one extends in the radial direction relative to the optical axis. Nomura et al. '341 shows that both faces are inclined. Although many references disclose raised cams with both opposing faces extending in the radial direction relative to the optical axis, no reference discloses raised cams, formed on the outer surface of a cam barrel, that have one face inclined and the other not.

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10. The prior art fails to teach a combination of all the features in claim 4. For example, these features include the detailed structure recited in claim 3 and also the limitation that the cam face opposed to the inclined one extends in the radial direction relative to the optical axis. Nomura et al. '341 shows that both faces are inclined. Although many references disclose raised cams with both opposing faces extending in the radial direction relative to the optical axis, no reference discloses raised cams, formed on the outer surface of a cam barrel, that have one face inclined and the other not.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Iikawa et al. (US 2002/0105731) discloses "rib-like cam protrusions, such as the cam protrusions 29b, formed on an annular member" (p. 13-14, paragraph 0123). Iikawa further discloses that "it is not necessary to form each cam protrusion 29b to have a tapered surface which is formerly necessary for removal of an associated mold" (p. 14, paragraph 0124). This language suggests that raised cams with at least one cam face inclined were known in the art some time prior to the filing date of Iikawa.

12. Miyamoto (6,195,212) provides a definition of undercut: "interference caused between a die assembly and a product when removing the product out of the die assembly" (col. 8, lines 14-16). This definition is fully consistent with the usage in the current application.

Japanese Publication JP-05257047-A, by Honda, provides further disclosure regarding a die that does not leave undercut in molding a raised cam (Abstract).

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Deborah A. Raizen whose telephone number is (703) 305-7940. The examiner can normally be reached on Monday-Friday, from 8:30 a.m. to 5:00 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Y. Epps can be reached on (703) 308-4883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9318 for regular communications and (703) 872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



RICKY MACK
PRIMARY EXAMINER

dar
June 27, 2003